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World Chronicle

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JOURNALISTS: Rob Watson, BBC
Tuyet Nguyen, UPI

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ATOMIC ENERGY

Hans BLIX, Director General of the International Atomic Energy Agency (IAEA), discusses many issues relevant to atomic energy. The IAEA helps countries compile relevant nuclear data and disseminates knowledge and know-how about the peaceful uses of nuclear energy. International thieves try to steal small quantities of radioactive materials from nuclear reactors in Russia and the former Soviet republics to sell to any interested party. Because of remote monitoring and automatic data transmission, control of nuclear material is now more effective and efficient. All non-nuclear-weapon States parties to the Non-Proliferation Treaty (NPT) are obliged to refrain from nuclear weapons tests as well as preparations for such tests. Mr. Blix believes that nuclear energy is safer and more friendly to the environment than conventional sources of energy.

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ANNOUNCER: From United Nations Headquarters in New York, this is **World Chronicle**, an unedited interview programme about major global issues. Here now to introduce our guest is the host of today's **World Chronicle**.

LITTLEJOHNS: I'm Michael Littlejohns, and this is **World Chronicle**.

One of the most significant events in modern history has been the harnessing of atomic energy. For the last five decades, countries have struggled to acquire this power, both military and peaceful purposes. Today, a number of countries in addition to the five declared nuclear Powers are believed to have nuclear weapons. Nuclear energy is also widely used around the world in the peaceful development and advancement of our societ How can we safeguard this unique but deadly energy? And what should the internationa community do to prevent the spread of nuclear weapons?

Our guest today is in a distinctive position to discuss nuclear energy. He is Hans B Director General of the IAEA, the International Atomic Energy Agency. Joining me to with Mr. Blix are Rob Watson of the BBC and Tuyet Nguyen of UPI.

Mr. Blix, welcome to World Chronicle.

Mr. Director General, I'm sure that my colleagues are going to be asking you a lot political questions about the nuclear capacities of Iraq and North Korea and perhaps a fe other States, but something that struck me, particularly in your report, the annual report your Agency, was one of the shorter chapters on the security of material. And you mentioned that 163 incidents were contained in the database that you have prepared on illicit material. Now, does this imply that one of our worst nightmares could happen? Th nuclear weapons could fall into the hands of terrorists, for example?

BLIX: No, practically all these incidents have regard to very small quantities of material, and most of the material is not material with which you can make any bombs at Most of it has regard to uranium, and it's natural uranium or it's depleted uranium, and don't make any bombs from that. You have to have highly-enriched uranium for bombs. most of the cases are actually shams. These are crooks that have succeeded in stealing s material in a nuclear power plant or a nuclear laboratory, and they pass it on and claim it has great value, and they hope to meet some people on the black market who will beli the same thing.

LITTLEJOHNS: And in the meantime, what are these crooks doing with this material?

BLIX: Well, they think they'll get money. The risk is that they'll get irradiated. of course there have been some cases of plutonium, and some few cases of even highly-enriched uranium, and therefore there has to be a greater vigilance. The whole problem arisen as a result of the disappearance of the dictatorial systems in the East. When that

police control disappeared, a civilian control and civilian accountancy was not coming in very quickly, and therefore there was a gap in which crooks could make themselves – could steal material.

LITTLEJOHNS: How serious is the threat of terrorists or other "unauthorized", quote-unquote, people getting hold of this – of plutonium?

BLIX: Well, as I said, the vast majority of the cases are very tiny quantities of material, and also they are sheer crookeries. They talk about red mercury, for instance, which is a sort of –

LITTLEJOHNS: But isn't there a risk it could go beyond that?

BLIX: Yes, there is a risk. The risk is not zero. But it's also a risk that if they steal this material and put it in some box at an airport, for instance, or a railway station, that you could have a radiation hazard.

WATSON: But it's not completely impossible? You wouldn't rule out the possibility that terrorists could get hold of enough nuclear material to make a bomb?

BLIX: No, you can't rule out almost anything. But the quantities we have seen over these years have been small, all of them.

NGUYEN: How much of this material have you already, you know, the West and the police have caught so far, coming out of the East?

BLIX: Well, we don't know. I mean, we might have been seeing the tip of the iceberg, also. But a quantity of 100 grams is still not a meaningless quantity, although you don't make a bomb of it. You would need to have some 25 kilograms of highly-enriched uranium to make a bomb. So while it is a problem that the world has to pay more attention to and does pay attention to, the States themselves of course are the most energetic, but we are sort of the focus, the centre of it, and we try to compile all the information. We are also active in helping States to set up better systems of account and control and to give technical equipment and training there of their experts.

NGUYEN: You said in one of your reports that North Korea may have some of the plutonium, or processed plutonium. How much did they actually have, and how much of this plutonium can go into the nuclear weapon race?

BLIX: We don't know how much plutonium they have. When they signed a comprehensive safeguards agreement with the IAEA they had to declare, they were obliged to declare the plutonium they have. And they declared a rather small quantity, below 1 kilogram. They gave us samples of this separated plutonium, and they also allowed us to take samples of waste solutions in their reprocessing plant. And they claim that the plutonium they had was the result of one campaign. Now, the isotopic composition of the separated plutonium and the waste solution was not the same, and therefore we could

conclude that there must have been more than one campaign and there must be more than the plutonium that they have declared. That was how the crisis started.

WATSON: Do you think – I can sort of put it really bluntly, being a blunt, ordinary journalist – did North Korea ever develop a nuclear weapon, or could it now?

BLIX: No one knows. I mean, we can –

WATSON: So there could be some bombs hanging around somewhere.

BLIX: We revealed that they have more plutonium than they have declared. They had declared a quantity below 1 kilogram. You would need something like 5 to 10 kilograms to make a bomb. Now, you make plutonium from the spent fuel in a reactor. They have a 5 megawatt reactor that has been in operation for some time, not all that long. And if you assume that they've taken out one core of that and separated it, then you could probably get enough for a bomb. Yes.

WATSON: So there is a possibility.

BLIX: It's a hypothesis, it's a hypothesis. We have never claimed from the IAEA that they are making a weapon; they deny it themselves. Maybe they aren't, but it cannot be excluded. It's a hypothesis that is possible.

WATSON: The North Koreans are well known for having given the entire world the complete runaround for the last few years on this issue, and they still haven't been giving you all the cooperation that you've been asking for. What more can you do to get the North Koreans to cooperate with you?

BLIX: Well, what happened after this crisis when we revealed that they had more than they declare was that the United States negotiated with them and they reached something called an agreed framework, under which North Korea promised that they would freeze the whole of their current nuclear programme, including the reprocessing plant and the 5 megawatt reactor, and in return the United States will help them to get two light water reactors about 1000 megawatts each. That is what is in process now. So rather than punishment you had a carrot. And we are verifying that they are actually – that the frozen installations actually are frozen. That is okay. They are frozen. Our concern is that they have not given us the information about how much plutonium did they have in the first place, and the evidence of it might be disappearing.

NGUYEN: Mr. Blix, the North Koreans are dealing directly with the Americans. I wonder if they are cutting you out of the process of really monitoring their programme?

BLIX: No. We are – this is different tracks we are on. They are – sure, the construction of the two light water reactors is with the KEDO [Korean Peninsula Energy Development Organization], a special organization set up by the US and South Korea and Japan, and we are not involved in that. But we have the task given to us by the Security

Council, envisaged in the agreed framework, to verify the freeze and also the safeguards agreement.

WATSON: I know from talking to Japanese and South Korean diplomats around the UN that they're absolutely terrified about North Korea. You talked about the number of carrots that have been fed to Pyongyang over the last few years. Do you think it's now time to hit them over the head with a great big stick?

BLIX: Well, it's not really for me, the Director General of the IAEA, to give the world advice. But it's a really volatile area, and hitting with sticks wildly in that area may not be the best thing to do.

LITTLEJOHNS: What about Iraq, Mr. Blix? How close was Iraq to becoming a nuclear power before the gulf war?

BLIX: Well, if you ask how close were they to getting one weapon, I would say that they were pretty close to that. And we had discovered, after the defection or disappearance of the Lieutenant Kamel, who later was killed in Iraq, that they were actually ready to take also the nuclear material under IAEA safeguards, the material which was in the research reactors. If they had done so, they would have been pretty close to a nuclear bomb within a short time. But one probably, not more.

LITTLEJOHNS: What about the situation now?

BLIX: No. We have been there since 1991 now, and the nuclear infrastructure is either destroyed by American bombs during the war or they have been exploded under our supervision, or the nuclear material has been airlifted through our efforts to Russia. What still remains as a component of a nuclear weapon programme is, of course, the scientists, the people. The scientists and the knowledge. That is there. And this is also what requires, calls for, a continuous and vigilant on-site monitoring and verification effort, which we have in place.

NGUYEN: But are you really mandated to really supervise those scientists and engineers? I mean, how do you know they are still there in Iraq and they can still produce or help develop programmes?

BLIX: Well, you see, Iraq is allowed to use nuclear techniques in medicine, for instance, as every country does, in combat of cancer and so forth, but not for a lot of other purposes. And we have the right to verify and to inspect all those activities. So we have insight into what a lot of their people are doing. Smaller experiments and small laboratories, I think our system is not so fine meshed that you can be sure about that. Just as documents, you cannot be sure, however many inspectors or policemen you have somewhere, that they don't hide documents or small pieces of equipment.

WATSON: You were telling Michael that maybe, who knows, Iraq was perhaps close to making one bomb before the gulf war started. But how—are you pretty confident that you have a complete picture of the programme that they did have up until the start of the gulf war, and that you know the extent to which components were weaponized? Because I think that's a concern of some people in the Security Council, particularly certain Western members. Have you done your job?

BLIX: Yes. Yes. Well, in some ways I think we have had a somewhat easier task than the Special Commission that is dealing with chemical weapons, biological weapons and missiles, because nuclear have special fingerprints, and you need very big industrial installations for the enrichment of uranium, so they were easier to spot. Also we have been lucky in getting much more original documentation than the Commission has done. We have, for instance, a practically complete set of technical documents covering their weaponization programme. So you can match that with a lot of evidence from suppliers abroad and you see the logic of the whole programme. Take a simple example—if you find an axe, it's logical to look for a handle; if you find a handle, it's logical to look for an axe. And this is the way we are proceeding. And we have -- the latest report from them [the Full, Final and Complete Declaration] is 1400 pages, and we are going through that and seeing are there any inconsistencies. But the net result is, I'll say that the hardware, the material—you don't make bombs with paper, you make bombs with hardware and equipment and nuclear material, and on that score we are fairly confident. As to whether we know every detail, no.

WATSON: One of the things I've always been very curious about is that UNSCOM, the chemical, biological missile weapons, then your side, the nuclear weapon side, you have monitoring systems to make sure that Iraq never builds them up again. But what I've never understood is why can't at one point Iraq just say, well, actually, off you go, we don't want you here, and then they could just start to do it?

BLIX: Yes, theoretically they could do that, but you have also seen examples where the Iraqis have done something and then very promptly some rocket or missile is landing on their territory. I think that's the answer. How long that will be, I don't know.

NGUYEN: I wonder if the international is focusing too much attention on Iraq and not enough on North Korea. For example, Iraq is under sanctions; there are teams of inspectors going into Iraq, I mean, all the time; North Korea has been kept on the side because of its programme, and it's dealing directly with the Americans. I wonder if, because of attention on Iraq, North Korea is getting away with some of the programme.

BLIX: I wouldn't say so, no. Certainly in the IAEA we are spending a lot of time both on Iraq and on North Korea, and I see no laxness in Washington or Tokyo or any other place. I think there is a lot of concern about the North Korean situation.

NGUYEN: Are they more dangerous than the Iraqis, or – I don't know, just –

BLIX: Well, in North Korea you have some plutonium; in Iraq I do not think you have any plutonium. We are confident that they don't have any enriched uranium either.

LITTLEJOHNS: This is **World Chronicle**. Our guest is Hans Blix, Director General of the International Atomic Energy Agency.

WATSON: I just – I'm not sure if you finished on North Korea, but one area I was interested in is the area of nuclear safety, and particularly in the former Soviet Union and other parts of Eastern Europe. Relatively recently, a Russian scientist was thought to have committed suicide inside a nuclear plant because he was so worried about the state of nuclear energy in Russia and parts of the former Soviet Union. Do you think there is a cause for concern given what happened in Chernobyl?

BLIX: Of course, we have done a tremendous amount of work on nuclear safety since Chernobyl, and began even before that, after the Three Mile Island accident. The whole Western world I think woke up to strengthen safety after Three Mile Island. But the whole Eastern world woke up after Chernobyl. And the type of reactors they had, and particularly the Chernobyl type, of course, have had a number of weaknesses. They don't have a containment, for one thing. They had a number of other weaknesses. And the IAEA helped to draw up lists of the weaknesses. And a lot of them have been settled, and a lot of them have been improved with Western assistance and also by action by the Russians themselves. Still, I think the Chernobyl type of reactor is one that might not be licensed in the West. Nevertheless, the Western experts remind me – though I'm not a nuclear physicist – tell me that the type of accident that we had in Chernobyl could not again occur, because they have undertaken such modifications in this type of reactor.

WATSON: So I can go to bed safely tonight thinking that there's not going to be another Chernobyl, I'm not going to wake up to a cloud of ghastly nuclear gases coming my way.

BLIX: Well, you might have some gasses, pipelines of gas blowing up, or you might have some steam explosions. Nuclear is not the only way of generating electricity which has dangers.

WATSON: But seriously, you think that there's almost zero chance of there being another nuclear accident?

BLIX: No, I don't think in any energy systems you can operate with zero risk. It's not intellectually honest to say so.

NGUYEN: I'd like to go back to the nuclear materials underground, coming from countries in Eastern Europe and Central Europe. What are the arrangements of the programmes to – I guess you are going to discuss that with the US – to set up some kind of monitoring to stop the sales of illegal nuclear materials? What are the plans in the future to do that, and how effective are they going to be to stop the underground traffic in nuclear materials?

BLIX: Well, we are talking about three different things here. One is the safety of nuclear reactors in Eastern Europe, and that is improving, although still there's a lot of things to be done. Another relates then to trafficking – that's an illicit, illegal stealing, thefts of nuclear material, of which we see less and less, though, as I said, there's still a risk. And you find that the Russians and others in Eastern Europe with our assistance *inter alia* are building up systems of regulatory control, of accountancy, of methods of making sure that people are checked before they go in and out, et cetera. We haven't seen any disasters coming from that area. The third point that I think you were touching was the question of verification of material that goes from dismantling of weapons. There's a lot of plutonium coming out of weapons that have been dismantled, and highly-enriched uranium. How are we assured that this is not going into a blackmarket or that it doesn't go into new weapons? And in this area there is a lot of movement lately in the political sphere.

NGUYEN: But that's what really Russia and the United States are discussing.

BLIX: Yes. Also we.

NGUYEN: Yes. But how much of that plutonium from dismantled weapons is on the market now?

BLIX: None, I think. None. I think the thefts that we have seen have not been from that side.

WATSON: What do you think the best thing is to do? Just get the stuff, put it in a rocket and fire it into space?

BLIX: To fire waste in space?

WATSON: Well, you know, the problem is, the problem you've identified is that if people are disarming weapons, what you were talking about, that there is plutonium left from these weapons which have been dismantled. What –

BLIX: No, that's not a realistic option. That's not one that's been discussed.

WATSON: What is a realistic option?

BLIX: Well, a realistic – there are several of them. And they've been discussed very recently, in Paris, at a conference between the nuclear weapon States and some other States. One option is to take the plutonium – well, for highly-enriched uranium it's pretty clear. They're going to dilute it with natural uranium and they get down to thereby to make a low-

enriched uranium that can be burned in light water reactors. You'll get electricity from the uranium. So you go from megatons of explosive capacity to megawatts of electricity. That's one path. But most of the weapons material is plutonium, and you do not – you can burn plutonium in breeder reactors, but what they have in mind as a principal approach is to mix it with uranium and make so-called mixed oxide fuel that can be burnt in light water reactors. And there are lots of light water reactors.

WATSON: So it would go from a war type use to a peaceful use.

BLIX: That's right. That's right. And where we come in, the IAEA, is first that we are the forum for discussions of these matters between the States that are dismantling weapons, but secondly we are also discussing, precisely at this juncture, how can the IAEA international inspection come in and verify that the plutonium that goes out of the weapons will only go for peaceful purposes. And this, you might say, in a way, is the first step towards international verification of nuclear disarmament.

NGUYEN: Do you see a trend that they will go more for nuclear reactors, I mean for energy consumption, instead of weapons?

BLIX: Well, I see clearly a trend that this material will go there, but the sad truth, from my point of view, is that nuclear power, peaceful nuclear power in the West and the industrialized world is stagnating.

LITTLEJOHNS: Why is that, Mr. Blix?

BLIX: I think basically the fear of radiation, the example of Three Mile Island, Chernobyl, and the concern about nuclear waste. And I deplore it deeply, because I think – to me one of the great concerns is the fear about global warming, and that is caused not by nuclear power, it is caused by the burning of coal, oil and gas. Nuclear power does not emit any carbon dioxide, and in fact a wider, more extensive use of nuclear power would be one of the most significant things that we could do to abate the emission of CO_2.

WATSON: I noticed that in your report to the General Assembly, that you're in favour of nuclear power over fossil fuels. Do you think then that it's a question of the nuclear industry having to hire a better PR firm? Hire a better public relations firm?

BLIX: Well, maybe. I mean, most of us are not PR people. We are lawyers, diplomats –

LITTLEJOHNS: You've been a great advocate of nuclear power for a long time.

BLIX: Well, I am, because I'm convinced – I'm a lawyer, but I'm – and I'm convinced about the environment. I came to support nuclear power because I'm in favour – I want to protect the environment. And all the greens are opposed to it!

NGUYEN: But do you think we have developed enough technology to really harness this kind of energy and use it without really creating incidents?

BLIX: Yes. Yes, I think so. But as I said a moment ago, I don't believe in zero risk, that's not intellectually honest to say. But you know, when you study the accidents in the energy field, you find that the biggest casualties, the biggest accidents are related to—what do you think? Hydropower. There are dams that burst, and they are very serious accidents. You have gas pipelines that explode with also a greater loss of life. You take the coal that is burned, take it the whole cycle, from the mines to the disposal of the waste, and you see the number of accidents in coal mines, in transportation, and then all the CO_2 and all the other things that go out into the atmosphere. It is not an innocent way of generating electricity.

NGUYEN: Do you think China should stop the construction of the Three Gorges Dam and go into nuclear reactors?

BLIX: I don't think there's going to be either/or. I think you will have a mix of energy. But I would like to see a world global mix of energy that relies less on fossil fuels and more on nuclear energy. I'm not against solar power, of course not, or wind power, or biomass—fine. But they are not, in a realistic judgement, going to give the large quantities of electricity that the world will need.

WATSON: On one very specific issue to do with the spread of nuclear power, the United States always gets desperately steamed up and starts screaming blue murder about Russia, China or anyone else selling Iran nuclear technology for nuclear energy technology. Do you think it's all rhetoric from the United States? Should we be worried about Russians and Chinese selling Iranians nuclear power plants?

BLIX: No, I don't think it's rhetoric from the United States. I think that they are very, very much concerned, for historical reasons and other reasons, about Iran, and they have seen that in Iraq they were acquiring nuclear—trying to acquire nuclear weapons, and they fear that a build-up of the whole nuclear sector in Iran, even including light water reactors, would place them higher up on the technological level. But I must add that the IAEA is also there and verifying their nuclear activities which are declared to us, and we have not seen any diversion of nuclear material. That doesn't mean that we are giving a clean bill of health, because we don't do that to anybody. But it simply means that, yes, we have nothing to support claims that they are actually working on a weapon.

NGUYEN: Mr. Blix, how do you see the prospect of the treaty banning all nuclear explosions coming into effect in the next two to three years? Is there any chance—

BLIX: Well, I hope so, because I think it is a very great achievement. And when I was a young diplomat, I was in Geneva some 20—well, more than 20 years ago—30 years ago negotiating a complete test ban. So I'm very glad to see it's coming into being now. Will it come into force? We know there are some hitches, some difficulties. But one thing

that is overlooked is that the 180 States that are non-nuclear weapon States parties to the Non-Proliferation Treaty, they are, of course, already prohibited from undertaking any nuclear weapon tests, even preparing for it. And we are verifying that. So the vast majority of countries in the world are already promising. But with the new treaty, you have the promise of the five nuclear weapon States, who have been the testers, and you have – we hope also to get Israel and Pakistan and India. That's more questionable.

LITTLEJOHNS: Are there other countries that have a nuclear potential apart from these three or four you mentioned? In your considered judgement? I mean –

BLIX: On this question I think I'll cite the press rather than – [LAUGH]

LITTLEJOHNS: No, but I mean your people in IAEA must have investigated the possibility.

BLIX: In Israel, Pakistan and India, of course, we are not seeing the whole nuclear sector, because they have not joined the Non-Proliferation Treaty. They have never given the commitment not to have nuclear weapons. We are inspecting some individual facilities which they have purchased on condition of inspection, but we are not saying anything about them, and it's a general assumption that these countries have a nuclear weapon capacity.

NGUYEN: There is a possibility that it will never go into force also in three years.

BLIX: Yes, that's right. It could happen. On the other hand, you can also have treaties which will be operative, even though they are not formally legally in force.

WATSON: This is your fourth term in charge of the IAEA. Do you think the world's a safer place now than when you first joined?

BLIX: Yes. I think so.

WATSON: Why?

BLIX: In terms of safety of nuclear power, great progress has been made in these 15 years that I have been there. There is a nuclear safety culture that has been gradually evolving. It's not reached the top level yet, but it's certainly evolving. That's one side. I think that great strides have been made –

LITTLEJOHNS: You're speaking about the non-peaceful uses or –

BLIX: No, no, no, I'm talking about nuclear safety, the safety of nuclear reactors, that great progress has been made in that area. I think also that the progress in handling and management of nuclear waste has been very great. And I think personally that the risk of proliferation has gone down. When I came to Vienna 15 years ago, you had Argentina, you had Brazil, you had South Africa, you had Cuba – there were lots of countries you worried about. Today, yes, there are still some worries; it would be far from me to belittle the danger, but less, yes. I think the world, with all the civil wars and terrorists we have, is a lot better now than during the cold war.

LITTLEJOHNS: What is your Agency's top priority now, Mr. Blix?

BLIX: Well, the immediate top priority, I would say, is the strengthening of the safeguards system, so that inspectors have more freedom of access to plants, and that we g access also to more information. We have a committee who's going to meet in January, a I hope that will bring us closer to a safeguard system with even more teeth than we have a the present time.

LITTLEJOHNS: Is your budget sufficient to enable you to do the kind of things t you want to do, including what you've just said?

BLIX: No, certainly not. I mean, we are hit by the attitude of the whole UN syste about zero growth. I think it is—I mean, of course, governmental institutions need pressu to become more efficient, we don't have a profit to show if we are efficient. So we all nee that pressure. But having said that, I think that international cooperation is a growth business, and you cannot do it free of charge. If we are to do effective verification in Argentina, Brazil, North Korea, Ukraine, you name it, then we also need some resources it.

LITTLEJOHNS: Mr. Blix, you've been a very interesting guest, as always, on this programme. And unfortunately our 28 minutes are up, so that's all the time we have. Thank you for being with us on this edition of **World Chronicle**.

Our guest has been Hans Blix, Director General of the International Atomic Energ Agency. He was interviewed by Rob Watson of the BBC and Tuyet Nguyen of UPI. I'm Michael Littlejohns. Thank you for joining us. We invite you to be with us for the next edition of **World Chronicle**.

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